REMARKS

Reconsideration of the application as amended is requested.

Applicants request a one-month extension of time for responding to the Office Action, and a separate petition to this effect is enclosed.

Applicant notes with appreciation the Examiner's indication that claim 16 is allowed.

In the Office Action dated February 23, 2007, claims 1-4 were rejected under 35 U.S.C. §103(a) as being unpatentable over Venable (4,996,812) in view of Graves (4,141,187), and claims 5-15 and 17-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Venable (4,996,812) in view of Graves (4,141,187) and further in view of Van Wagoner (4,719,723).

As an initial matter, Applicant notes that the subject Office Action appears to include several typographical errors and sentence fragments. Due to the sentence fragments, Applicant is unsure of the Examiner's position concerning the prior art. For example, page 3 of the Office Action states that "one of ordinary skill in the art using any adhesives with the desired properties commensurate with the intended function and purpose of the roof structure [sic] In view of the above, it would have been obvious to employ the adhesive of non-volatile polyester based type in order to provide a polymeric adhesive that is capable of providing a water impermeable polymeric layer upon curing." It is unclear if the phrase "in view of the above" is referring to the sentence fragment immediately preceding, or if it is referring to the material that was apparently omitted from the preceding sentence.

Furthermore, Applicants are unsure why the Office Action asserts that it would be obvious to provide an adhesive "that is capable of providing a water impermeable polymeric layer upon curing. Applicant has not claimed an adhesive that is "capable of providing a water impermeable polymeric layer upon curing." Applicant is unsure why the Office Action asserts that an unclaimed feature is obvious.

Applicant further notes that the Office Action appears to include errors with respect to the prior art. For example, at the bottom of page 2, the Office Action states that "Graves discloses many types of adhesives to use in roof surfacing, one of which includes a non-volatile

polyether based adhesive." Applicant has reviewed Graves '187 in detail, and can find no disclosure of a non-volatile polyether based adhesive.

The reasoning behind other statements is also unclear. At the bottom of page 3 through the top of page 4, the Office Action states that "the thickness of the membrane and the fleece or matting have been considered a matter of choice. Further, the measurement values for the bond strength and the viscosity of the adhesive are also a matter of choice. One of ordinary skill in the art would have appreciated making the fleece/membrane, the bond strength and the viscosity of any measurement valves suitable for the intended use function and purpose of the roof structure. The recited measurement values a [sic]very much within the scope of the invention to Venable. Further the significance and relevancy of the specific values lacks criticality, significance and relevancy to the overall claimed/disclosed invention. Finding the optimal valves providing the intended function of the structure requires mere routine experimentation..[sic]"

Applicant is unsure why the Office Action asserts that "the recited measurement values a [sic] are very much within the scope of the invention to Venable". The Office Action proposes a hypothetical modification of Venable, and it is not at all clear that Venable, as modified, would in fact meet the claimed values. Applicant respectfully asserts that it is not reasonable to propose a hypothetical modification of a prior art reference in a manner that may or may not provide a given result, and further asserts that the result is within the teachings of the reference prior to the hypothetical modification.

With respect to the assertion that "it would have been obvious to employ the adhesive of non-volatile polyester based type [sic] in order to provide a polymeric adhesive that is capable of providing a water impermeable polymeric layer upon curing," Applicant asserts this is incorrect. Applicant has enclosed a copy of an article from Professional Roofing, July of 2003 (Appendix A). Professional Roofing Magazine is the official publication of the National Roofing Contractors Association ("NRCA"). The Article asked several experienced contractors what roof system they would install on a low slope roof system. The contractors included Bob Daly, Low-Slope Roofing Committee chairmen and President of Kaw Roofing and Sheet metal, Kansas City, Kansas; Tom Dessent, Low-Slope Roofing Committee Member

and secretary of corporation-estimator and sales for Dessent Roofing Company, Inc., Chicago; Jim Eckstein, Steep-Slope Roofing Committee Chairman and president of C.A. Eckstein Inc., Cincinnati; Will Fort, III, Chairman of the Architectural Sheet Metal and Metal Roofing Committee and president of Fort Roofing and Sheet Metal Works, Inc., South Carolina; Chris Jurin, Low-Slope Roofing Committee Member and vice-president of Jurin Roofing Services Inc., Quakertown, Pennsylvania; and Michael Lanouette, member of the Spray Polyurethane Foam-based Roofing Committee and Urethane Roofing Division manager for F.J. Dahill Co., Inc., New Haven, Connecticut.

These individuals are clearly skilled in the art of low slope roofing. Significantly, none of the people skilled in the art specified a moisture-curing adhesive to bond a membrane to a roof structure.

With respect to the purported obviousness of simply selecting the adhesive that Applicant has claimed in the present application and asserting that this would be a mere design choice, Applicant respectfully asserts that providing a roofing system in the real world is not nearly so simple and the accepted thinking at the time would have led one to a different solution. Applicant again points out that none of the individuals of the NRCAs technical committee listed in the July 2003 article selected moisture-curing adhesive as claimed in the present application. At the time of Applicant's invention, the conventional wisdom of those skilled in the art clearly led away from use of a moisture curing adhesive as recited in the pending claims. As further evidence of this, Applicant has attached herewith the NRCA 2007 Education catalog listing the various courses and training materials relating to roofing that are available through NRCA (Appendix B). This material, by itself, it 23 pages long. As stated at page 3 of the enclosed material, "purchasing a roof system can be overwhelming. There are many factors to consider, and it is essential to match the characteristics of a roof system with the building's design and use." The numerous course listings make it clear that providing a roof that meets the various technical requirements is not at all simple.

Applicant has also enclosed a list of papers that were presented at the Twelfth International Roofing and Waterproofing Conference held September 25-27, 2002 (Appendix C), as well as a copy of the paper "Cold Roofing and Water Proofing Systems in the United

States: An Independent Overview of their Performance Characteristics, Material Analysis and Solutions for Proper Application" by John A. D'Annunzio, President, Paragon Roofing Technology, Inc., of Shelby Township, Michigan (Appendix D). Significantly, the paper by Mr. D'Annunzio does not discuss use of moisture curing adhesive to adhere a roof membrane. In fact, cold process systems were not believed to be viable by those skilled in the art. Specifically, at page 6, the D'Annunzio paper states that "conventional roofing pundits dismiss cold-applied systems as merely repair and maintenance procedures." At page 7, the paper by D'Annunzio states that "although all roof and waterproofing systems face weather constraints, imminent failure is more probable with cold-applied materials." (emphasis added). Significantly, although the D'Annunzio paper discusses water-based adhesives at pages 10 and 11, it does not disclose moisture curing adhesives.

Applicant has also enclosed a copy of a paper entitled "Laboratory Evaluation of EPDM Roof Membranes: A 17-year History of Performance" by Brian D. Gish and Kathleen P. Lusardi of Carlisle SynTec Systems, Carlisle, Pennsylvania from the 1991 International Symposium on Roofing Technology (Appendix E). This paper states that "all roofing materials are affected by the combined influence of water, solar ultraviolet radiation, heat, ozone and thermal cycling. Biological attack, atmospheric pollution and physical damage are additional factors that can diminish the performance of the roofing membrane. Roof system design can magnify or minimize the exposure of the roof membrane to environmental stresses that cause deterioration and eventual failure of the roof system." The authors further state that "the combined effect of all these factors is so complex that even the most rigorous laboratory test program alone cannot completely predict the long-term performance of roofing membranes and system components."

Given the actual thinking of those skilled in the art at the time, and the numerous factors that must be taken into account in providing a viable roof structure, Applicant respectfully asserts that discovering an adhesive that solves the numerous long-standing problems associated with prior art systems is not nearly so simple as it might appear after one has seen Applicants solution to the problem.

Claim 1 has been amended to recite a water proof membrane having a lower side that is substantially free of fleece material. Claim 1 has also been amended to recite a substantially non-volatile adhesive comprising a silyl-terminated polymer. Support for the non-fleece membrane can be found at paragraph 16 of the present application as filed. Support for the silyl-terminated polymer of amended claim 1 can be found at paragraphs 17-24 of the present application as filed.

Venable '812 states that "it has been known in the past to construct roofs using synthetic rubber membranes formed from EPDM rubber. In such constructions, asphalt or other adhesive substance is first applied to a substrate, followed by an attempt to directly adhere the EPDM rubber to the adhesive. In the first place, it is very difficult to properly bond the EPDM rubber directly with an adhesive, and accordingly the resultant roof is subject to wind uplifts. Secondly, such a construction provides little if any vapor ventilation capabilities, and thus such roofs are often prone to excessive blistering." (column 1, lines 34-44, emphasis added). Venable '812 further states that the use of fleece-like matting "permits the membrane to be strongly adhered to the adhesive . . . at the same time, use of the matting makes it possible to fabricate the roof structure with vapor venting spacing between the adhesive material and the flexible membrane sheet."

Thus, Venable '812 teaches away from a membrane that does not include fleece as recited in amended claim 1.

Applicant respectfully asserts that there would be no reason whatsoever to modify Venable '812 to eliminate the fleece-like matting. Furthermore, Applicant points out that not all adhesives bond properly to all surfaces. For example, the epoxy based adhesives of Graves '187 are not believed to be compatible with conventional EPDM roof membranes. Graves '187 itself teaches use of an outdoor type of carpeting (column 2, lines 44-46), and it is not reasonable to assert, without any supporting evidence whatsoever, that such adhesives would be suitable for use with other membranes.

Furthermore, as discussed above, claim 1 has been amended to recite a moisture curing adhesive comprising a silyl-terminated polymer. Applicant has reviewed Graves '187 and can find no disclosure of a silyl-terminated polymer adhesive. Graves '187 nor Van Wagoner '723

disclose a moisture curing silyl-terminated polymer based adhesive, such that no combination of these references can possibly anticipate amended claim 1. Although Graves '187 does discuss an adhesive having a curing agent that is activated by water, the adhesives of Graves '187 appear to utilize a two part epoxy which is based upon an entirely different chemical reaction. The adhesive disclosed in Graves '187 appear to require the presence of a significant amount of water to provide for curing. Specifically, the adhesives of Graves '187 appear to consume or use up water during the curing process. Thus, water would apparently have to be added to the mixture to ensure that sufficient water is present. If the adhesives of Graves '187 were applied under a waterproof membrane as recited in claim 1, rather than a permeable outdoor carpet as actually taught by Graves '187, it is not at all clear that the adhesive would be exposed to sufficient moisture to provide for curing of the adhesive in areas away from the edge of the membrane.

Applicant notes that the burden to show prima fasie obviousness is on the Examiner; Applicant does not need to prove that hypothetical combinations would not work, or that there is some criticality or unexpected result associated with a claimed feature. Applicant again reiterates that providing a safe, environmentally friendly roofing system that can withstand the affects of wind, temperature, and the like is not so simple as it may first appear once one has the benefit of Applicants solution in front of them. Despite the significant health and safety issues associated with two part spray systems as taught by Venable '812, and the millions of dollars of damage to buildings caused by failure of existing roof systems, no one to date had found it "obvious" to arrive at the solution of the present invention. If selection of an adhesive solving these significant long-felt needs were in fact "obvious", Applicant respectfully asserts that the roofing contractors, insurance companies, architects, and others involved in the building industry would not have chosen to incur many millions of dollars in losses year after year.

Claims 2-4 depend from claim 1, and are therefore are believed to be allowable for those reasons set forth above in connection with claim 1. Furthermore, claim 3 recites that the waterproof membrane comprises a PVC material, and claim 4 recites that the waterproof membrane comprises a layer of EPDM rubber. Applicant again reiterates that not all

adhesives adhere properly to all materials. Accordingly, Applicant respectfully asserts that it would not be a mere design choice to select an adhesive that is compatible with these materials, and provides the required degree of wind uplift, durability, and other such requirements.

Independent claim 5 has been amended to recite a waterproof membrane having an upper side and a lower side, and a moisture curing silyl-terminated polymer based adhesive disposed on at least a portion of the lower side of the waterproof membrane. Neither Venable '812, Graves '187 nor Van Wagoner '723 disclose a moisture curing silyl-terminated polymer based adhesive, such that no combination of these references can possibly anticipate amended claim 5. Applicant further asserts that if the actual knowledge of those skilled in the art is considered, and the realities associated with providing a reliable, functional roof system in the real world are considered, it would not be obvious to one skilled in the art to provide the arrangement of amended claim 5.

Claims 6 and 7 depend from claim 5, and are therefore believed to be allowable for those reasons set forth above in connection with claim 5.

Independent claim 8 has been amended to recite a moisture curing adhesive comprising a silyl-terminated polymer that bonds a flexible membrane to a roof substrate. As discussed above in connection with independent claims 1 and 5, the cited references do not disclose a silyl-terminated polymer adhesive, such that no combination of Venable '182, Graves '187 and Van Wagoner '723 can possible anticipate amended claim 8.

Claims 9-15 depend from claim 8, and are therefore believed to be allowable for those reasons set forth above in connection with independent claim 8.

Furthermore, claim 13 recites that the flexible membrane is bonded to the roof substrate and has a bond strength of at least one hundred sixty-five pounds per square foot. Applicant respectfully asserts that it is not reasonable to propose a hypothetical modification of a prior art reference in a manner that may or may not provide a given result, and further assert that the result is within the teachings of the reference prior to the hypothetical modification. Specifically, even if Venable '812 were modified to include the adhesives of Graves '187, it is not at all clear that the resulting system would provide a bond strength of at least one hundred sixty-five pounds per square foot as recited in claim 13.

Independent claim 17 has been amended to recite moisture curing adhesive bonding the foam insulation to the steel deck without the use of mechanical fasteners. Applicant respectfully asserts that none of the cited references teach or suggest bonding foam insulation to a steel deck utilizing moisture curing adhesive.

Claims 18-20 depend from claim 17, and are therefore believed to be allowable for those reasons set forth above in connection with independent claim 17.

New claims 21-27 have also been added. New claim 21 recites a roof deck structure including a fluted steel deck and a substantially rigid panel adhered to the steel deck by moisture-curing adhesive. A flexible waterproof membrane is disposed above the substantially rigid panel. Support for new claims 21-27 can be found at paragraph 26 of the present application as filed. Applicant respectfully asserts that none of the cited references disclose or suggest the arrangement of new claims 21-27.

Applicant wishes to note that Thomas Edison stated that "genius is one percent inspiration and ninety-nine percent perspiration." And that "results? Why, man, I have gotten lots of results! If I find ten-thousand ways that something won't work, I haven't failed. I am not discouraged, because every wrong attempt discarded is often a step forward . . . " If the mere existence of a problem causes the solution to that problem to be obvious, there would be no such thing as an invention.

Applicant has made a concerted effort to place the present application in condition for allowance, and a notice to this effect is earnestly solicited. In the event there are any remaining informalities, the courtesy of a telephone call to the undersigned attorney would be appreciated.

Respectfully submitted,

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Date

/Jeffrey S. Kapteyn/
Jeffrey S. Kapteyn
Registration No. 41 883
Price, Heneveld, Cooper, DeWitt & Litton, LLP
695 Kenmoor, S.E.
Post Office Box 2567
Grand Rapids, Michigan 49501
(616) 949-9610

JSK/csd